

# Technical training. Product information.

## F25 Introduction



**BMW Service**

Edited for the U.S. market by:  
**BMW Group University**  
**Technical Training**  
ST1106 2/1/2011

# General information

## Symbols used

The following symbol is used in this document to facilitate better comprehension or to draw attention to very important information:



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Contains important safety notes and information that needs to be observed strictly in order to guarantee the smooth operation of the system.

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## Information status and national-market versions

BMW Group vehicles meet the requirements of the highest safety and quality standards. Changes in requirements for environmental protection, customer benefits and design render necessary continuous development of systems and components. Consequently, there may be discrepancies between the contents of this document and the vehicles available in the training course.

This document basically relates to left hand drive vehicles with European specifications. Some controls or components are arranged differently in right-hand drive vehicles than shown in the graphics in this document. Further differences may arise as the result of the equipment specifications used in specific markets or countries.

## Additional sources of information

Further information on the individual topics can be found in the following:

- Owner's Handbook
- Integrated Service Technical Application.

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The information contained in this document form an integral part of the technical training of the BMW Group and are intended for the trainer and participants of the seminar. Refer to the latest relevant information systems of the BMW Group for any changes/additions to the Technical Data.

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VH-23/International Technical Training

# F25 Introduction

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# F25 Introduction

## 1. Introduction

### 1.1. The new BMW X3

The F25 was introduced to the US market in January 2011. The new second generation BMW X3 builds on the success of the original by developing its core competencies, while adding new technology to establish new benchmarks for agility, efficiency and comfort. The new BMW X3 will be produced in an expansion of the BMW Spartanburg, South Carolina plant.

The new X3 is available (at launch) in the following models:

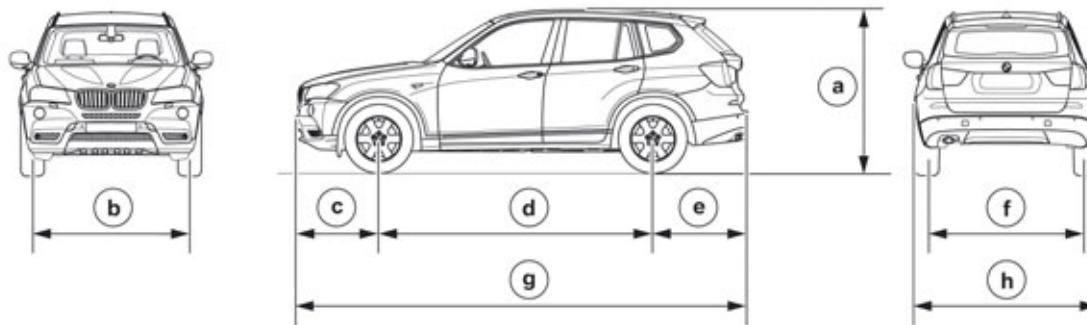
- X3 xDrive28i
- X3 xDrive35i



TK10-0845

BMW X3

#### 1.1.1. Dimensions



TK10-0463

External dimensions of F25

Index	Explanation		Value
a	Vehicle height, empty	[mm]	1661
b	Track width of base wheels, front	[mm]	1616
c	Front overhang	[mm]	861

# F25 Introduction

## 1. Introduction

Index	Explanation		Value
d	Wheelbase	[mm]	2810
e	Rear overhang	[mm]	977
f	Rear track width	[mm]	1632
g	Vehicle length	[mm]	4648
h	Vehicle width without exterior mirror	[mm]	1881

### Comparison F25/E83

		F25	E83
Vehicle height, empty	[mm]	1661	1674
Front track width	[mm]	1616	1524
Front overhang	[mm]	861	821
Wheelbase	[mm]	2810	2795
Rear overhang	[mm]	977	953
Rear track width	[mm]	1632	1542
Vehicle length	[mm]	4648	4569
Vehicle width without exterior mirror	[mm]	1881	1853
Diameter of turning circle (with vehicle kerb weight)	[m]	11.9	11.7
Shoulder room, front	[mm]	1455	1412
Shoulder room, rear	[mm]	1423	1398
Elbow room, front	[mm]	1483	1433
Elbow room, rear	[mm]	1458	1452
Maximum headroom, front	[mm]	1033	1041
Maximum headroom, rear	[mm]	994	1002
Knee room, rear	[mm]	61	39
Luggage compartment capacity	[liters]	550	480

### Weights and payload

F25 compared to E83

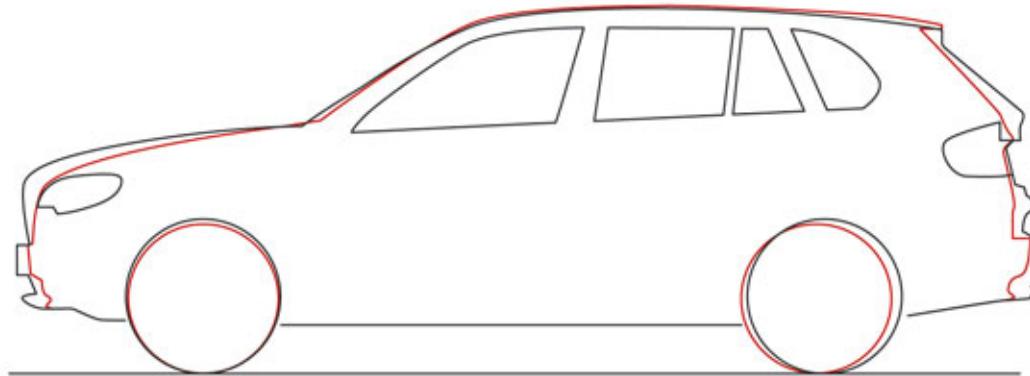
Vehicle	Transmission	Vehicle curb weight (DIN)	Payload	Max trail- er load
F25 X3 xDrive28i	Automatic transmis- sion	[lbs]	4112	904
F25 X3 xDrive35i	Automatic transmis- sion	[lbs]	4222	904

# F25 Introduction

## 1. Introduction

### 1.1.2. Silhouette comparison

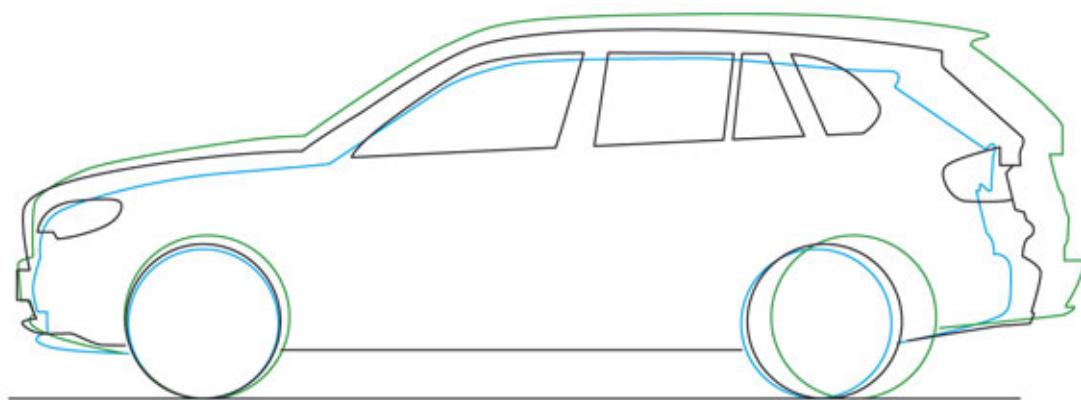
F25  
E83



TK10-0462

F25 Silhouette comparison with BMW X3 E83

F25  
E70  
E84



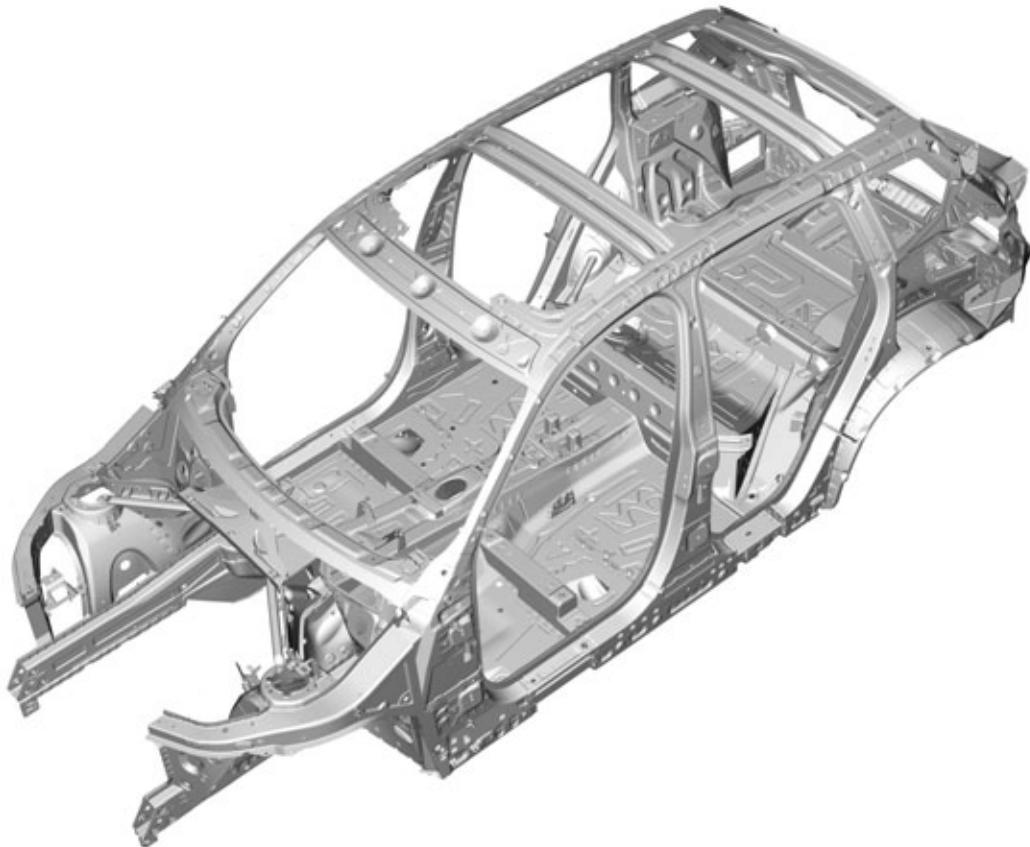
TK10-0461

F25 Silhouette comparison with BMW X5 E70 and BMW X1 E84

# F25 Introduction

## 2. Body

### 2.1. Bodyshell



TK10-0460

F25 Bodyshell

#### 2.1.1. Introduction

The F25 body is comprised mainly of strong, lightweight materials. This is achieved with the intelligent application of higher-strength, multi-phase steels and super-strength, press hardened steels. On average, the strength of the body materials used for the F25 is 27% higher than the E83.

The construction with lightweight materials makes a decisive contribution to reducing the overall vehicle weight which results in a significant contribution to the following:

- Driving dynamics
- Reducing fuel consumption
- Reducing CO<sub>2</sub> emissions
- Passive safety.

# F25 Introduction

## 2. Body

### Highlights

- High proportion of multi-phase steels (14 % of the bodyshell weight)
- High proportion of press hardened steels (4% of the bodyshell weight).

The higher-strength multi-phase steels and super-strength press hardened steels ensure maximum strength of the passenger safety cell with low weight, thus making a huge contribution to passive safety.

In the case of the press hardened steels, an innovative development with passive corrosion protection is used. This development is unprecedented as suitable press hardened sheet metal materials with sacrificial corrosion protection have not been available in the market until now. The development of press hardening technology means that a series-compatible procedure for the manufacturing of galvanized press hardened components is now available.

During this process, galvanized sheet steel is initially cold worked then heated to roughly 1652°F (900°C). They are then cooled down right away to roughly 158°F (70°C) and hardened within a few seconds in the pressing tool with integrated water cooling directly. Following this procedure, the minimum elastic limit of the components is significantly higher than 1000 MPa.

Components manufactured in this manner can be used in areas where moisture is present without corrosion of the base material occurring. Additional corrosion protection measures are no longer required for this steel.

### 2.1.2. Materials

A modern vehicle body must meet a great many requirements. Despite small outer dimensions, it should provide a passenger compartment that is as large as possible. In the event of an accident, passengers must be protected against injury as effectively as possible. The torque that is generated also means that all assemblies, e.g. the engine and transmission, rely on the body for support. Furthermore, the body must have high static and above all dynamic rigidity in order to guarantee the outstanding driving characteristics that are typical of BMW.

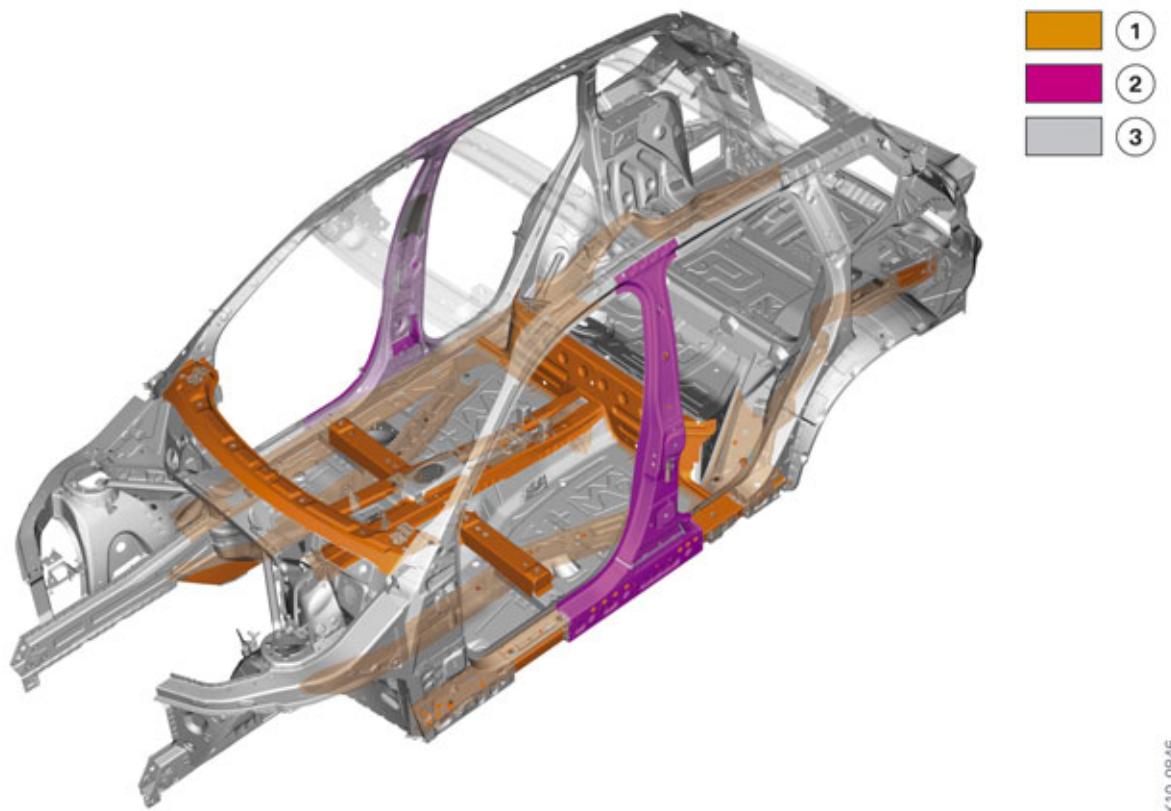
Last but not least, the supporting structure of the vehicle must be durable over the long term and, in the event of an accident, it must be possible for repairs to be carried out at a reasonable cost and with a minimum amount of effort.

In order to meet all of these requirements, BMW pursues the strategy of creating each component from the material best suited for its function.

The word "steel" is ultimately an umbrella term that describes the large number of alloys with widely varying properties that are used.

# F25 Introduction

## 2. Body



Material qualities of F25 bodyshell

Index	Explanation
1	Multi-phase steels (> 300 MPa)
2	Press hardened steels (> 900 MPa)
3	Other steels (< 300 MPa)

Multi-phase steels are steels where the structure consists of a number of phases. Examples of higher-strength multi-phase steels with a limit of elasticity  $R_{p0.2}$  of 300 to 600 MPa are dual-phase steels or TRIP steels. Examples of higher-strength multi-phase steels with a limit of elasticity  $R_{p0.2}$  above 600 MPa are complex-phase steels or martensitic-phase steels.

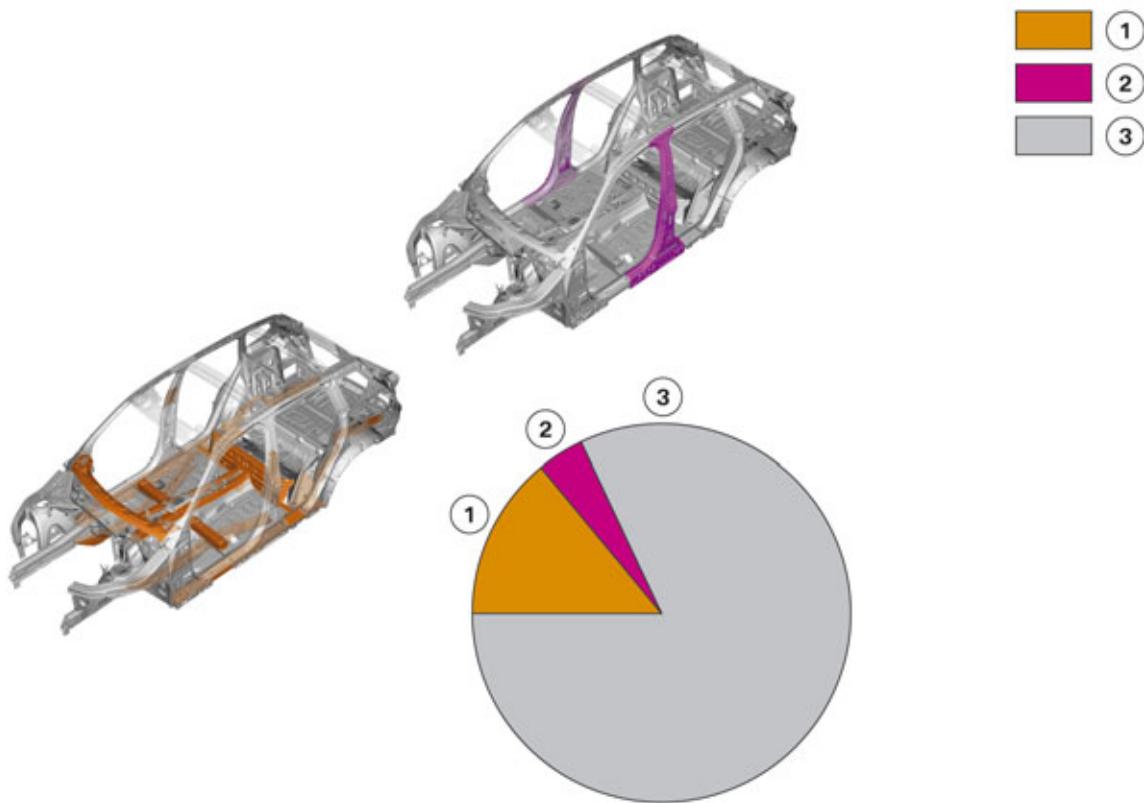
Press hardened manganese-boron steels are super-strength steels with a limit of elasticity  $R_{p0.2}$  above 900 MPa.

### Weight proportions

In order to reduce the vehicle weight and still ensure maximum strength of the bodyshell, the proportion of higher or high-strength multi-phase steels and super-strength press hardened steels used has increased.

# F25 Introduction

## 2. Body



F25 Bodyshell, distribution of material grades

TK10-0847

### 2.1.3. Corrosion protection and leak prevention

In order to optimize corrosion protection, mainly galvanized steel plates and sheet aluminium plates are used on the body. The joining technologies used are welding and bonding.

The overlaps of the metal panels are designed in such a way that the join surfaces are minimized. This is done to prevent bondline corrosion. Water is prevented from entering the body structure by means of constructive bonding and sealing of the join surfaces.

In particularly critical areas, expansion foam parts are used to seal the body cavities against moisture. Where sheets are doubled up in wet chambers, these are sealed twice and, if required, additionally preserved with wax.

Where required, the overlaps of the metal panels in dry chambers are sealed off to prevent dust from entering.

# F25 Introduction

## 2. Body

Corrosion-critical material pairing is avoided. The combination of material substrates and joining methods is carefully coordinated to eliminate the risk of corrosion.

### Coating process

In the painting process in the immersion cleaning unit, the bodyshell is:

- cleaned by alkali
- phosphated (roughing of the surface for better adhesion)
- coated in the immersion process with KTL (corrosion protection paint that coats all the body cavities from the inside).

The organic layer of paint is then annealed.

The body is sealed with PVC and protected by filler, top coat and clear varnish on the outer skin.

With the F25, selective cavity preservation is carried out in particularly critical body areas.

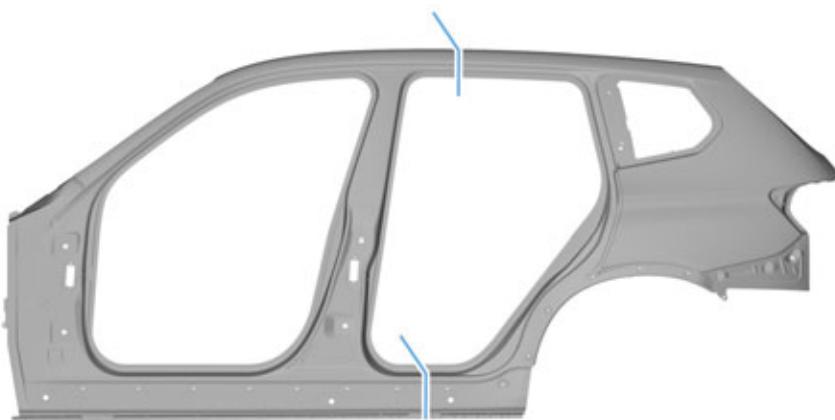
The objectives of these body treatments are:

- No visual signs of corrosion for five years in the area of the outer skin
- No visual signs of corrosion in the undercarriage area for three years
- No rust damage for twelve years
- Extremely water and dust tight.
- Fording depth at 4 mph 500 mm /19.7 inches.

### 2.1.4. Front end

For the repair of the front section of the body, there are no major differences compared with the E83.

### 2.1.5. Side frame



TK10-0836

F25 Separation points for repair

# F25 Introduction

## 2. Body

For repair, the preferred separation points listed above should be used.



F25 Spare part sections

The rear side panel is welded to the body shell at the factory. For repair purposes, the rear side panel is bonded and riveted.

### 2.1.6. Roof

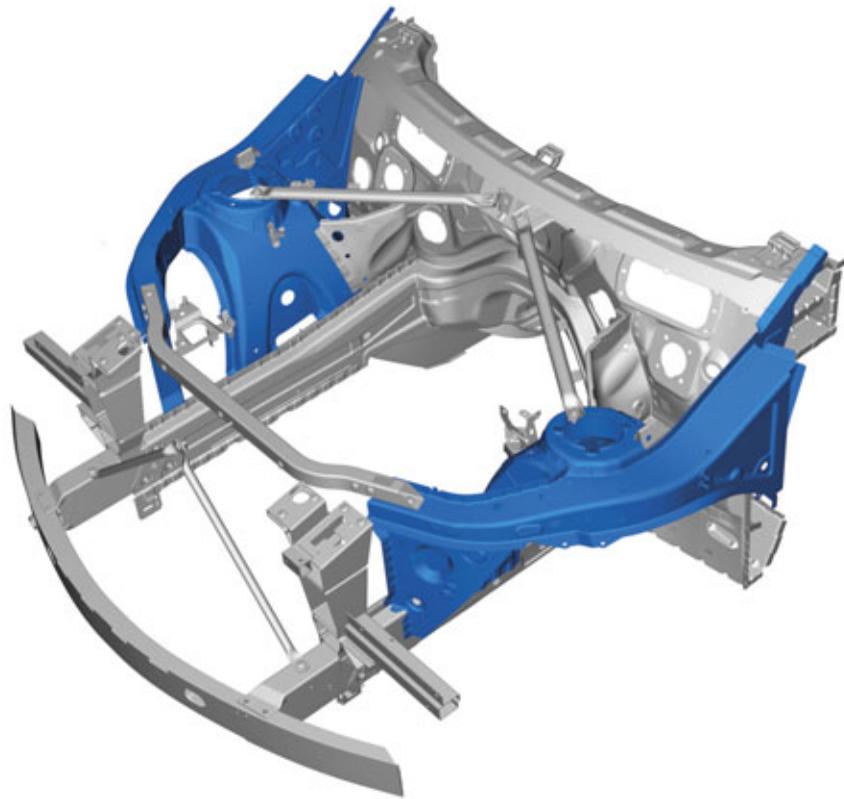
The roof is welded to the body shell ex works. For repair purposes, the roof is bonded and riveted.

### 2.1.7. Wheel arches, front

The front wheel arches are welded to the body shell at the factory. For repair purposes, the front wheel arches are bonded and riveted.

# F25 Introduction

## 2. Body



TK10-0851

F25 Front wheel arches

### 2.1.8. Rear end

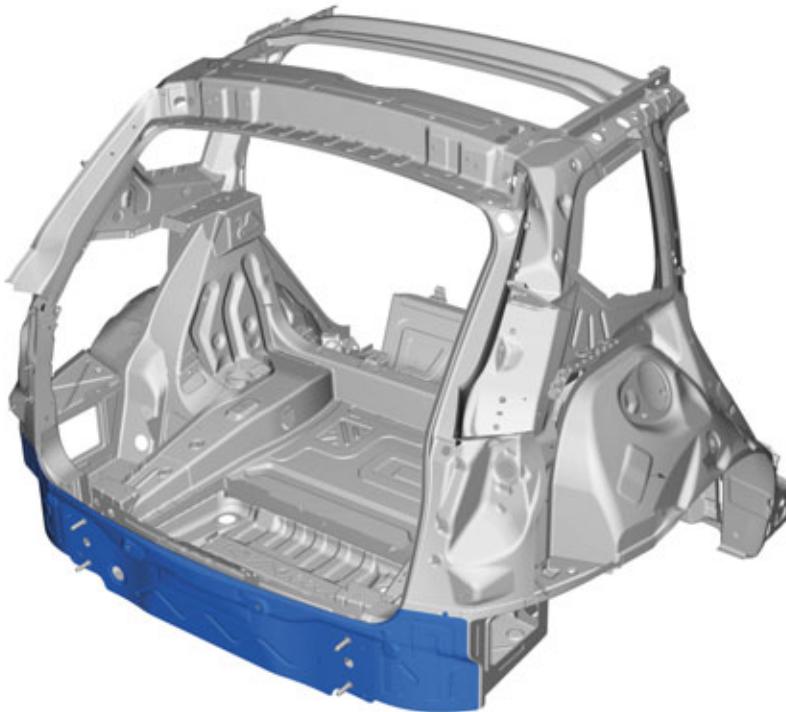
There are no major differences in the repair procedures of the rear body section compared to the E83 vehicle.

### 2.1.9. Rear trim

The rear trim panel is welded to the body shell at the factory. For repair purposes, the rear trim panel is bonded and riveted.

# F25 Introduction

## 2. Body



TK10-0941

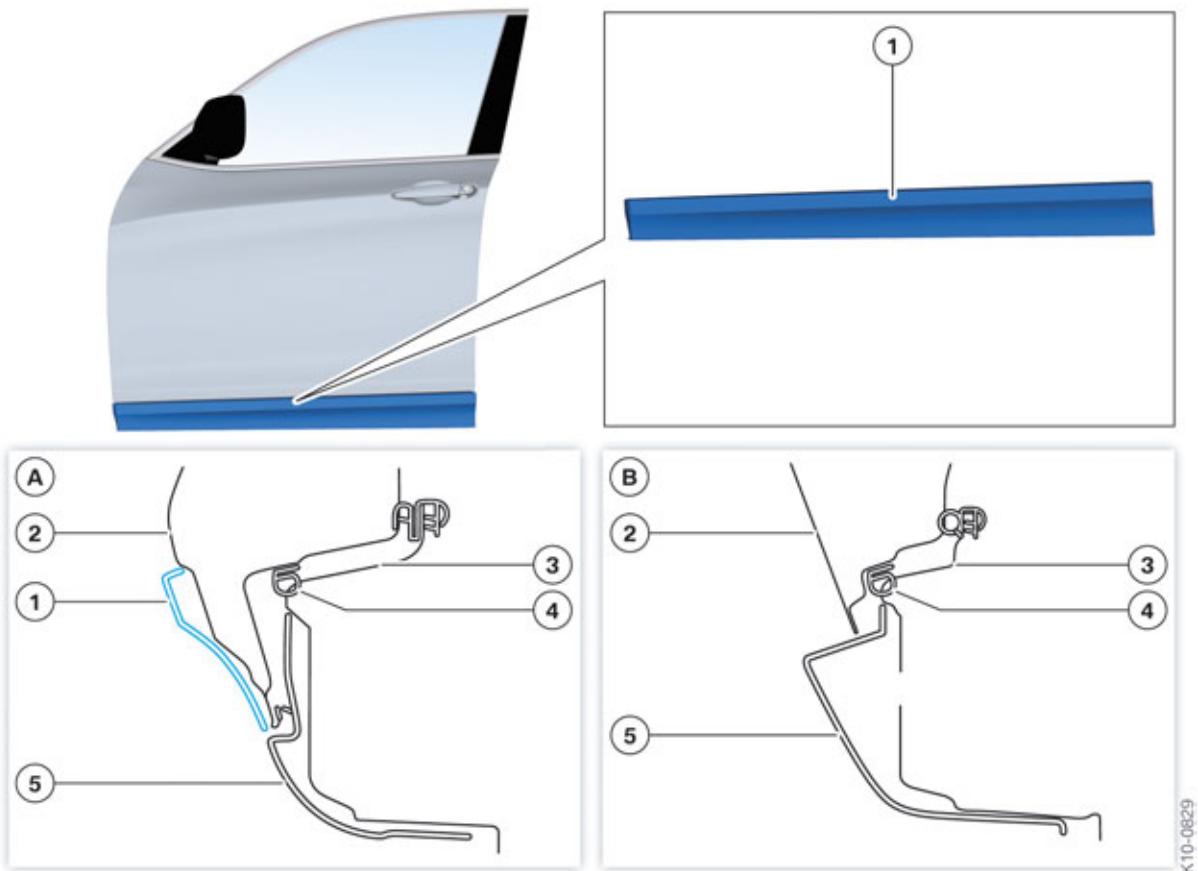
F25 Rear trim panel

### 2.2. Doors

A trim panel has been fitted on the door outer skin on the F25, this is a first for a BMW.

# F25 Introduction

## 2. Body



F25 Trim panel, door outer skin

Index	Explanation
A	F11 (not US)
B	E70
1	Trim panel (door outer skin)
2	Door outer skin
3	Side frame
4	Door seal
5	Trim panel (entrance)

### Highlights of this design feature are:

- Improved access convenience
- No soiling of clothing when getting in and getting out
- Trim panel is mounted without additional screw connection.

# F25 Introduction

## 2. Body

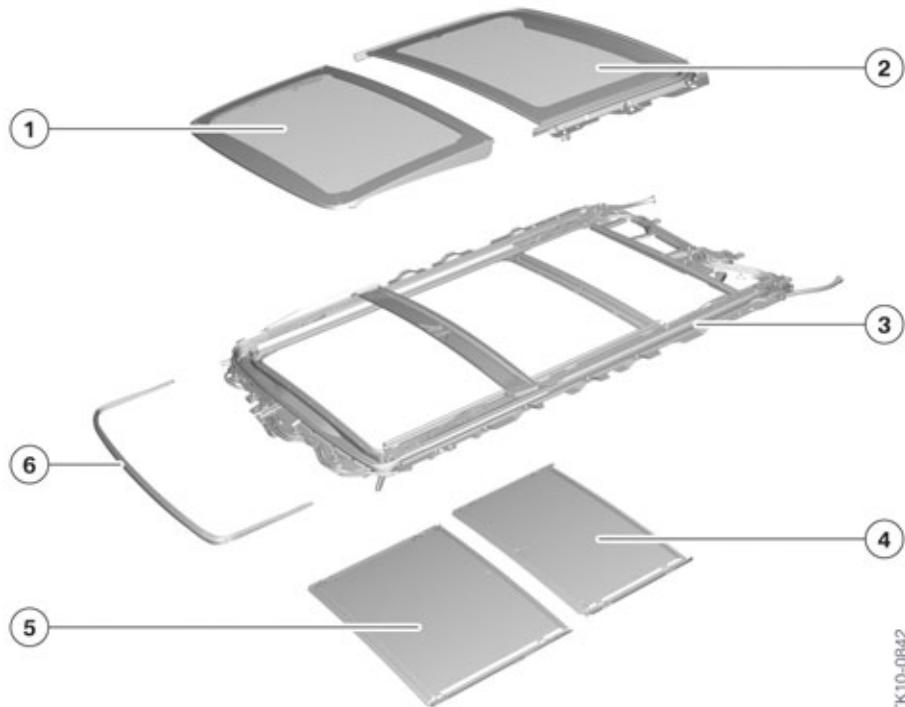
The door of the F25 is drawn down further than the door of the E70. An additional sealing lip at the door outer skin trim panel protects large sections of the entrance against dirt contamination. This significantly reduces the risk of soiling clothing when getting in and out.

The trim panel is designed as a single-shell injection moulded part clipped to the door outer skin. The grained surface makes the trim panel less susceptible to damage when compared to a painted component. In vehicles with the optional equipment X-Line package (SA 3XL), a chrome strip is bonded to the trim panel in order to further enhance the impact of the component.

### 2.3. Panoramic glass sunroof

A two-part panoramic glass sunroof (SA 402) can be ordered as optional equipment for the F25. The larger glass surface lends the passenger compartment a bright and spacious appearance. This enhances the sense of space.

The front edge of the glass slide/tilt sunroof cover runs more or less parallel to the windshield/roof edge (contour roof) which lends the vehicle a more harmonious overall appearance.



F11, panoramic glass sunroof

# F25 Introduction

## 2. Body

Index	Explanation
1	Glass slide/tilt sunroof cover
2	Fixed glass element
3	Frame with electric motor for glass slide/tilt sunroof cover and sliding trims
4	Rear sliding trim
5	Front sliding trim
6	Wind deflector

The panoramic glass sunroof is a slide / tilt sunroof that runs inwards. The glass panel and sliding trim can be operated fully electrically and are controlled according to the usual BMW slide / tilt sunroof operating logic by means of a switch in the roof function center (FZD):

- To open the roof: press the switch backwards
- To close the roof: press the switch forwards
- Roof in vent position: press the switch upwards.

The same operating logic used for opening BMW panoramic glass sunroofs is applied to the sliding trim. The operating logic corresponds to the direction of movement of the components and is thus easy for customers to understand.

To exclude the risk of possible injury, an anti-trap mechanism is implemented for the complete travel path of the glass slide/tilt sunroof cover and the sliding trim. The roof function center (FZD) can detect the sudden increase in the power consumption of the motors which occurs when the glass slide/tilt sunroof cover or sliding trim encounters an obstruction. They are then stopped and moved back slightly in the opposite direction. The electronic control system takes account of international legal requirements.

By using suitable materials for the sliding trim, the noise level when the glass slide/tilt sunroof cover and sliding trim are fully closed is similar to that of a vehicle with a normal roof.

When the roof is open, a mesh-type wind deflector ensures that background noise remains within acceptable limits.

### 2.3.1. Dimensions

#### Dimensions

- Glass slide/tilt sunroof cover, length: 20.47 in (520 mm)
- Glass slide/tilt sunroof cover, width: 35.62 in (905 mm)
- Fixed glazed element, length: 20.47 in (520 mm)

# F25 Introduction

## 2. Body

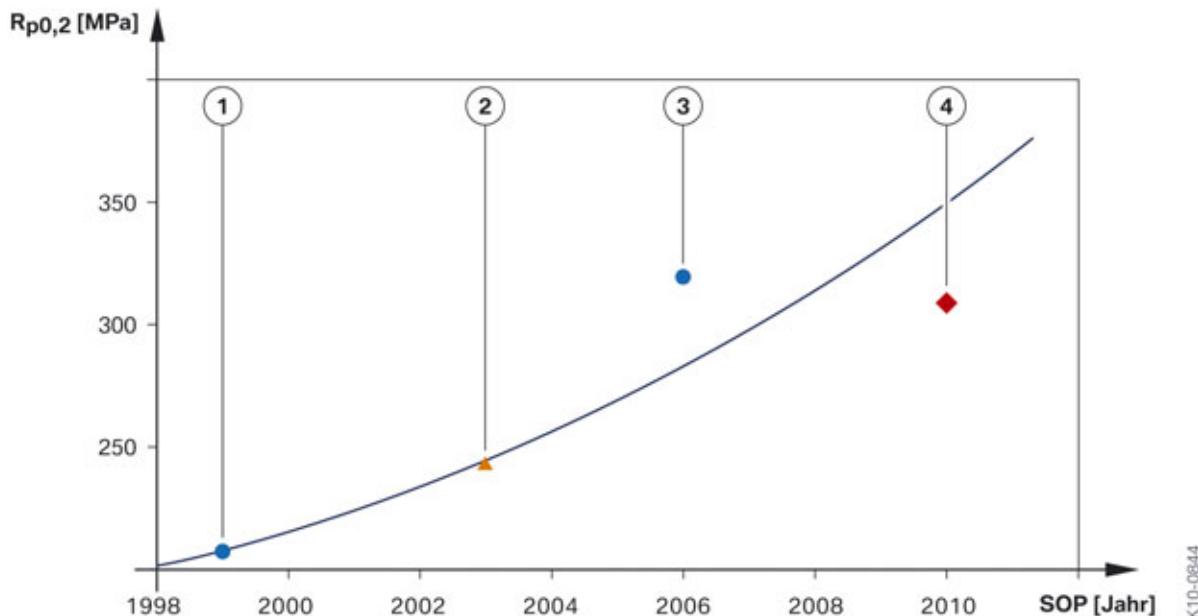
### Aperture size

- Glass slide/tilt sunroof cover fully opened: 17.12 in (435 mm)
- Sliding trim fully opened: 34.25 in (870 mm)
- Ventilation gap, glass slide/tilt sunroof cover: 1.14 in (29 mm)

## 2.4. Strength

The minimum elastic limit is stated as the value for the strength of the bodyshell.

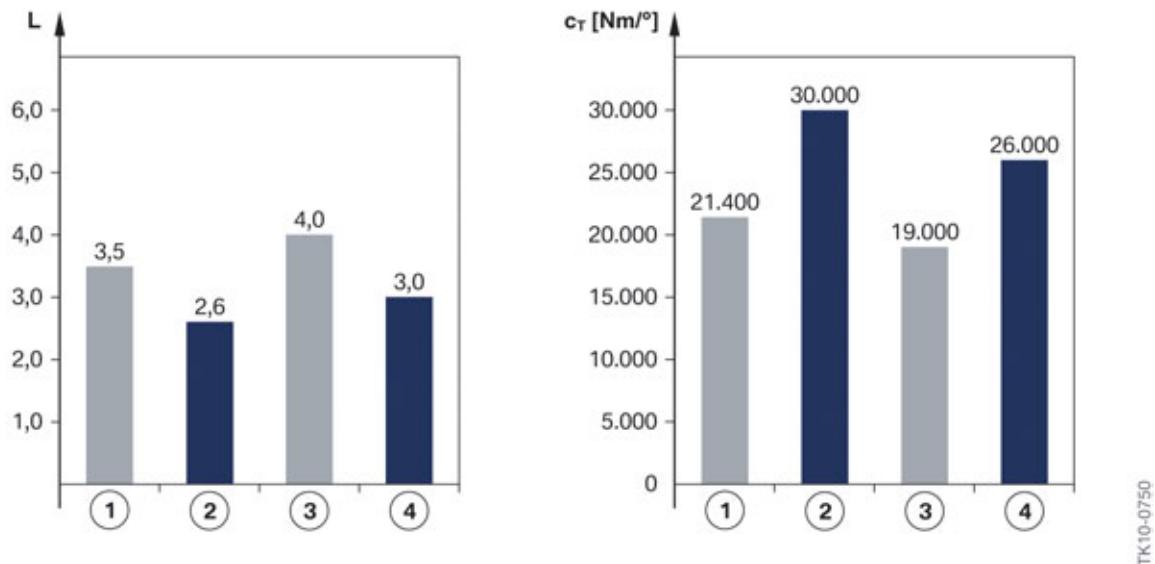
The minimum elastic limit  $R_{p0.2}$  refers to the tension (force per unit area in MPa or N/mm<sup>2</sup>) above which an irreversible plastic deformation of 0.2 % occurs.



Index	Explanation
1	X5 (E53 model year 1999)
2	X3 (E83 model year 2003)
3	X5 (E70 model year 2006)
4	<b>X3 (F25 model year 2010)</b>
SoP	Year of the series launch

# F25 Introduction

## 2. Body



F25 Comparison of lightweight construction grade and static torsional rigidity of bodyshell with BMW X3 E83 bodyshell

Index	Explanation
$c_T$	Static torsional rigidity
L	Lightweight construction grade
1	E83 (without panoramic glass sunroof)
2	F25 (without panoramic glass sunroof)
3	E83 (with panoramic glass sunroof)
4	F25 (with panoramic glass sunroof)

The static torsional rigidity of a body describes the degree of distortion around an axis through the application of torque. As a conflict of objectives exists between lightweight construction and rigidity, the static torsional rigidity can never be considered in isolation, and instead in conjunction with the lightweight materials grade.

The lightweight materials grade describes the ratio between the value for static torsional rigidity in relation to the tire contact patch (toe x wheelbase) and the weight of the bodyshell (without doors and lids). It provides a measure of the degree of rigidity achieved for the tire contact patch with the smallest possible mass.

The F25 has a lightweight construction grade of 2.6 owing to intelligent geometric design of the load paths and construction with lightweight materials.

## 2.5. Vibrations and acoustics

### 2.5.1. Vibration comfort

The prerequisite for ensuring good vibrational characteristics of the vehicle is carefully targeted design of structural dynamics in interaction with the excitation from the chassis and suspension.

# F25 Introduction

## 2. Body

To ensure this, the rigidity of the body has been further increased by roughly 27 % in comparison with the E83.

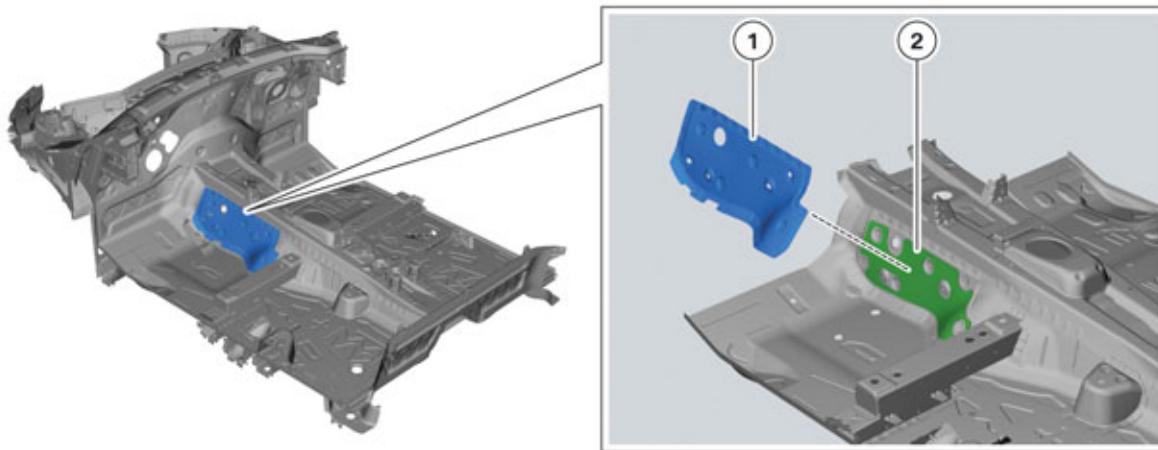
The vibrations in the chassis and suspension and complete vehicle have been harmonized through selective optimization of the excitation forces in the chassis and suspension and also the properties of the vibration system.

This made it possible to compensate for the higher excitation that occurs in comparison with the E83 due to the use of run-flat tires.

### 2.5.2. Acoustics

The sound insulation has a significant impact on the acoustics of the passenger compartment. Effective insulation against noise emitted by the drive train components is normally achieved by using more weight. To keep this increase in weight as low as possible, the design in the bulkhead area is condition-based. In doing so, only the surface weight that is absolutely required, depending on the necessary components, is used at this point.

A new sound insulation concept has been applied in the transmission tunnel area, which combines high structural rigidity with a high degree of insulation and sheet metal panel damping. During this process, sandwich panels are systematically joined together using a damping mass material.



F25 Sound insulation concept

Index	Explanation
1	Sheet steel
2	Damping mass material

# F25 Introduction

## 2. Body

### 2.6. Crash testing research

#### 2.6.1. Preventative measures

Based on the research data compiled from racing vehicles, the extreme loading conditions that occur in these situations, the following measures must be taken to enhance the passenger safety cell and maximize the safety of drivers:

- Roll cage
- Body-contoured seat with special six-point seat belt
- Safety clothing with crash helmet.

Passive safety is an extremely important issue for BMW and its customers on the road, and not just in racing sports.

The following comparison vividly demonstrates the forces at work during a collision: crashing against a wall at 50 km/h (31 mph) is roughly the same as falling out of the 4th story of a building. At this speed, the seat belt can significantly reduce the risk of injury but cannot eliminate it altogether. Injuries due to impact with the steering wheel during severe head-on collisions can be prevented with the additional protection of the airbag (an ideal compliment to the seat belt system).

The airbag, in conjunction with the 3-point automatic-reel belt, provides optimum protection in the event of a head-on collision. A great deal of thought is required in developing its triggering behavior to ensure it only activates when needed. Smaller vibrations that occur when driving over a level crossing for example must not cause the airbag to trigger.

Around 14 % of all accidents in the BMW accident database are side impact and 20 % of these side collisions were fatal accidents.

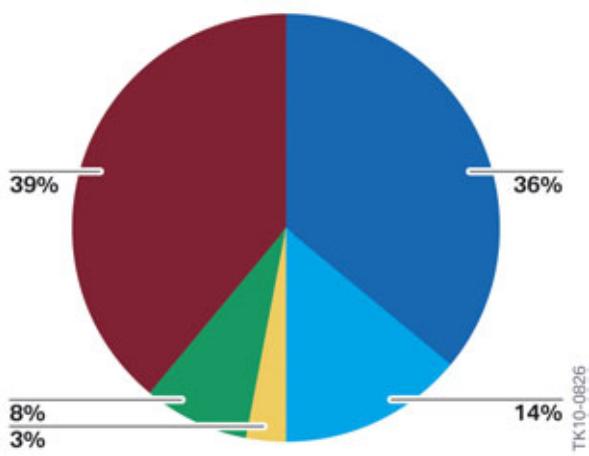


Diagram – Accident Statistics

# F25 Introduction

## 2. Body

Index	Explanation
36 %	Head-on collision
14 %	Side collision
3 %	Rear-end collision
8 %	Rollovers
39 %	Multiple pile-ups

These insights show that protection of the occupants from side collisions needed to improve significantly. The first and most important measure needed to protect the vehicle occupants in the event of a side collision is, and also remains, a stable vehicle structure in order to reduce intrusion.

The introduction of a side airbag, and also the head airbag from 5/97, were further steps taken to provide occupants with optimum protection against a side collision.

### 2.6.2. Safety testing/Accident analysis

Before a new BMW vehicle is launched onto the market, a large number of crash tests are carried out. The purpose of these crash tests is to verify compliance with the legal regulations in the relevant countries and also consumer protection requirements.

Crash tests are also carried out based on the insights gained from accident research carried out by BMW. Accident research by BMW has revealed a high percentage of head-on collisions with trees which is why BMW carries out a head-on crash test against a post in order to optimize the vehicle structure, even if there is no legal requirement to do so.

The safety of BMW vehicles is therefore much higher than the legal requirements for safety worldwide. The most important crash tests are explained in detail below:

- Head-on collision according to US-NCAP
- Side collision according to US-NCAP
- Side collision according to US-IIHS
- Rear-end collision according to FMVSS 301
- Pedestrian protection

The total number of accidents recorded in the accident statistics is divided up according to the various crash situations: head-on collision, side collision, rear-end collision and rollover.

### 2.6.3. Head-on collision

A range of head-on collision tests have been devised in order to make the testing conditions as realistic as possible.

The US-NCAP (New Car Assessment Program) is a consumer protection test that places the toughest demands on the vehicle structure and passenger restraint system in the context of a head-on collision.

# F25 Introduction

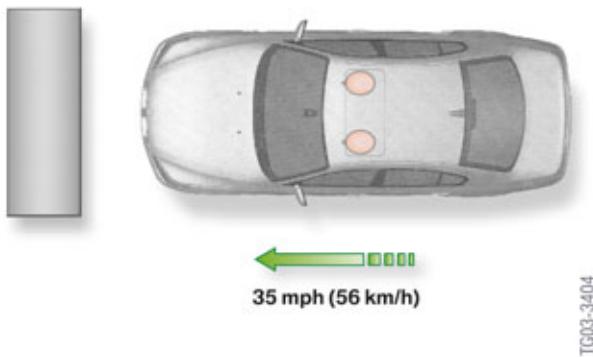
## 2. Body

### Head-on collision according to US-NCAP

The US-NCAP on the other hand prescribes a collision against a rigid barrier with an impact speed of 35 mph (56 km/h) and 100% offset.

The vehicle is occupied by two dummies, one on the driver seat and one on the front passenger seat.

However, a 40% offset test is carried out in the USA by the IIHS (Insurance Institute for Highway Safety) at 40 mph (64 km/h) against a deformable barrier.



Head-on collision according to US-NCAP

### 2.6.4. Side collision

Four side collision tests have been devised in order to make the testing conditions as realistic as possible. The configurations in USA and Europe are different.

The US-IIHS test places the toughest demands on the vehicle structure and passenger restraint system during the side collision due to the modified test conditions with increased ground clearance.

The main evaluation criterion is the individual and overall evaluation of the risk of injury for various areas of the body. These tests also provide important insights into the structural behavior of the passenger compartment under loads that partially occur locally.

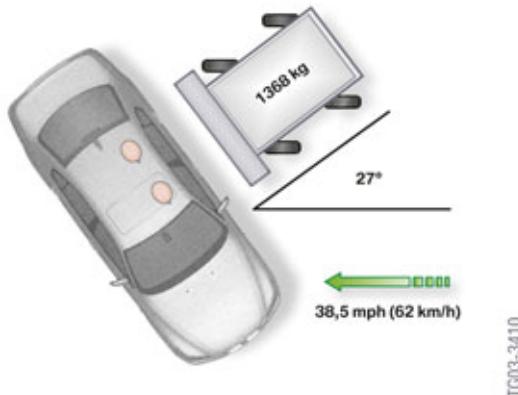
### Side collision according to US-NCAP

The US-NCAP prescribes 38.5 mph (62 km/h) and 27 degrees as the impact speed and angle respectively of the moving barrier.

The driver's seat of the vehicle and the seat behind it are occupied by a dummy.

# F25 Introduction

## 2. Body

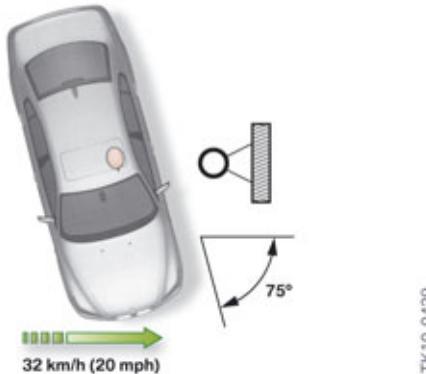


Side collision according to US-NCAP

### Post side collision according to US-NCAP

With the post side collision according to US-NCAP, the vehicle is driven at 20 km/h (12 mph) into an upright post with a diameter of 254 mm at an angle of 75 degrees in the area of the dummy's head.

The driver's seat of the vehicle is occupied by a dummy.



Post side collision according to US-NCAP

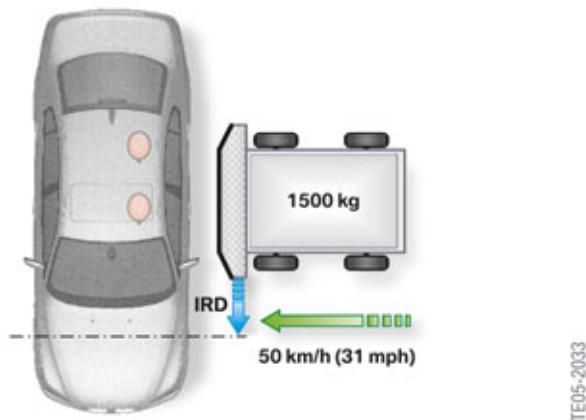
### Side collision according to US-IIHS

With the US-IIHS side collision, a deformable aluminium honeycomb barrier with a ground clearance of 379 mm which is modelled on a bumper collides with the driver's side at a speed of 50 km/h (31 mph). Depending on the wheelbase of the vehicle, the distance between the barrier and the front axle (IRD - Impact Reference Distance) varies.

The driver's seat of the vehicle and the seat behind it are occupied by a dummy.

# F25 Introduction

## 2. Body



### 2.6.5. Rear-end collision

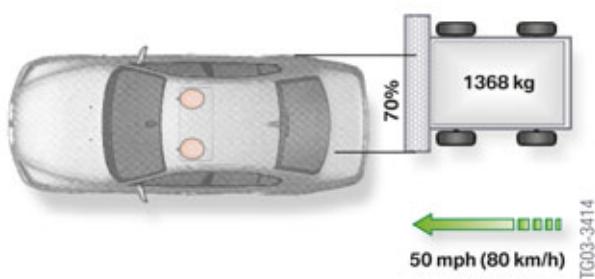
The US law FMVSS 301 (Federal Motor Vehicle Safety Standard) is used as the basis for the rear-end collision test. This corresponds to one vehicle driving into another stationary vehicle at 80 km/h.

#### Rear-end collision according to FMVSS 301

US regulation FMVSS 301 prescribes a rear-offset crash with 70% offset at 50 mph (80 km/h) with a moving barrier (with mass of 1368 kg).

A aluminium honeycomb deformable barrier is fitted to the barrier wagon.

The test is carried out on the tank filling side and serves as a leakage test of the fuel system. In addition, the structure of the vehicle, seats, rear axle and the components in the luggage compartment are tested under this load.



Rear-end collision according to FMVSS 301

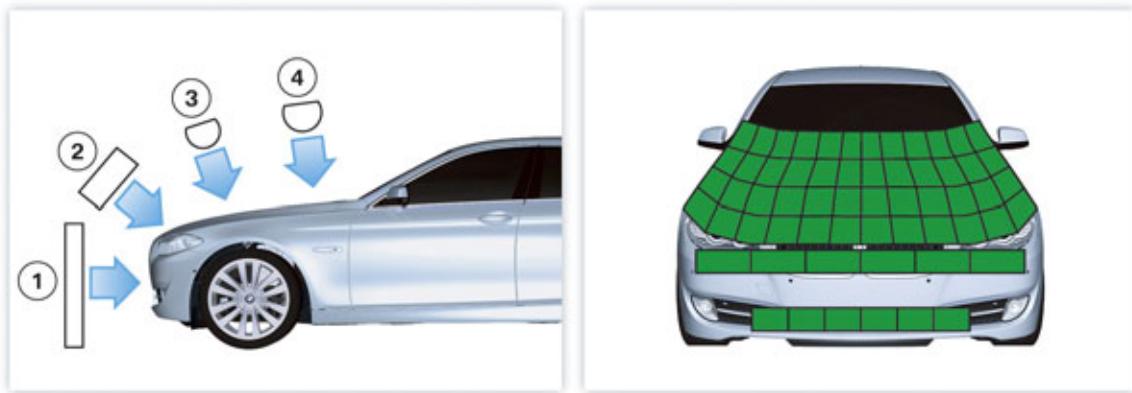
# F25 Introduction

## 2. Body

### 2.6.6. Pedestrian protection

#### Pedestrian protection

In addition to passenger protection tests, crash test also includes a pedestrian protection test. During this test, the risk of injury to children and adults in the event of a head-on collision at 40 km/h (25 mph) is evaluated. Sheathed metal cylinders and balls of varying weights are used as a substitute for legs and heads and shot at defined points on the front of the vehicle; the stress on the "body parts" is measured.



TG09-2257

Pedestrian protection

Index	Explanation
1	Leg
2	Thigh
3	Head of a child
4	Head of an adult

# F25 Introduction

## 3. Exterior trims and interior equipment

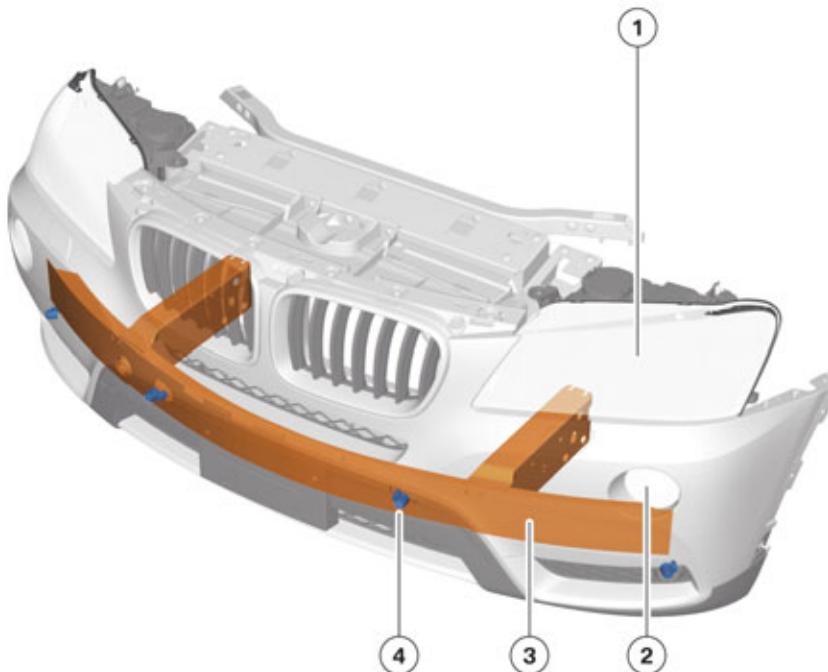
### 3.1. Exterior trims

#### 3.1.1. Front end

The front end of the F25 can be completely removed. It consists of the bumper, the lights, a number of sensors and covers.



**The repair instructions must be strictly observed when removing and installing the front end!**



F25 Front end

Index	Explanation
1	Headlight
2	Fog lights
3	Bumper support
4	Sensor (with SA 508, Park Distance Control, PDC)

The front end which incorporates corresponding deformation cavities below the hood (at least 60 mm/2.36 in) as well as resilient hinge kinematics, satisfies the stringent pedestrian protection requirements.

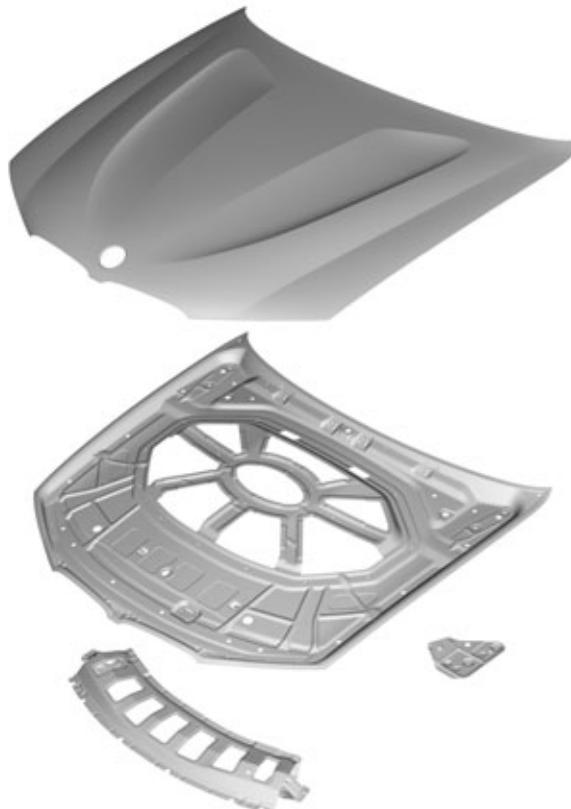
The bumpers play their part in passive protection for pedestrians due to their design, geometry and 50 mm/1.98 in foam.

A weight reduction of up to roughly 4 kg/8.8 lb can be achieved by using aluminium as opposed to steel profiles.

# F25 Introduction

## 3. Exterior trims and interior equipment

### 3.1.2. Hood



TK 10-0831

F25 Hood

The Hood is made of steel and features deformation elements for pedestrian protection.

### 3.1.3. Undercarriage concept

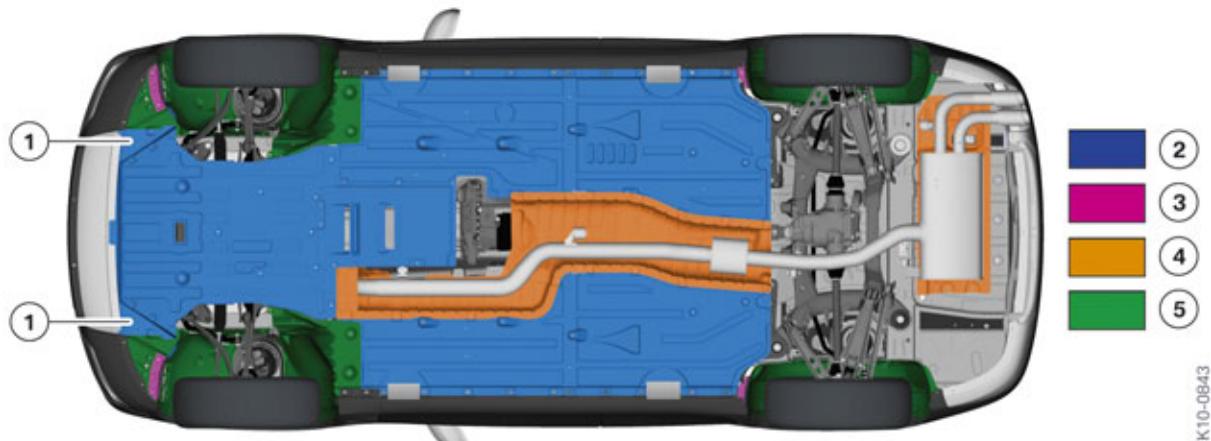
The vehicle undercarriage which is more or less entirely smooth reduces drag and upward thrust. Specific air inlets ensure optimum cooling of components. The underbody covers improve acoustics and protect lines and other components against stone chipping damage and dirt contamination. This protects the body and components against corrosion.



Changes to the vehicle underbody or omitting trim panel components leads to changes in the air flow at the vehicle underbody. This can influence road grip.

# F25 Introduction

## 3. Exterior trims and interior equipment



TK10-0843

F25 Underbody panelling (X3 xDrive35i shown as example)

Index	Explanation
1	Brake cooling air ramp
2	Underbody panelling
3	Air guide
4	Heat insulation
5	Wheel arch panel

The air guides enhance the effect of the smooth vehicle underbody. They reduce the drag of the wheels and improve the oncoming flow that cools the brakes. Furthermore, integrated ramps in the vehicle underbody provide additional cooling of the brakes.

### 3.2. Interior equipment

#### 3.2.1. Dimensions

		F25	E83
Shoulder room, front	[mm]	1455	1412
Shoulder room, rear	[mm]	1423	1398
Elbow room, front	[mm]	1483	1433
Elbow room, rear	[mm]	1458	1452
Maximum headroom, front	[mm]	1033	1041
Maximum headroom, rear	[mm]	994	1002
Knee room, rear	[mm]	61	39
Luggage compartment capacity (rear seats upright)	[liters]	550	480

# F25 Introduction

## 3. Exterior trims and interior equipment

### 3.2.2. Material and color concept

#### Covers

In addition to the classic equipment colors Black and Savanna Beige, the material and color range of the F25 has been extended to include Red Brown, Oyster and Havanna.

Equipment	Explanation
Sensatec	This leather-like surface has a vibrant effect and has a natural appearance despite being manufactured from synthetic products. The American name for the surface is "Leatherette". It is available in the colors Black and Beige.
Leather High	The optional equipment Nevada Leather available for X models typically has a slightly more robust pronounced grain and is impressive due to the high quality of the leather and pleasant to touch. It is available in the colors Black, Sand Beige and Oyster (with Mojave and Chestnut available in Priority1)

#### Decorative trims

Equipment	Explanation
Satin silver matt	This satin matt shimmering base strip has a characterful silver appearance with a low-key modern effect.
Aluminium fine grain	This metal strip has an elegant brushed appearance, provides a sporty cool highlight and is the right compliment for a more sporty combination of materials.
Fineline beige high-gloss fine-wood trim	This optional equipment has been newly developed for the F25. It's grain contains fine streaks and is linear in appearance. The warm color of the tranquil wood graphic emphasizes warmth and modernity.
Fineline Wave high-gloss fine-wood trim	This wood interior trim conveys an elegant classic yet modern feel due to its special wave structure and dark colors.

### 3.2.3. Dashboard

The F25 has a one-piece dashboard with two-tone PVC skin.

# F25 Introduction

## 3. Exterior trims and interior equipment



F25 Passenger compartment, dashboard

The upper part of the dashboard is always black and the lower part is available in black or beige.

### Highlights

- Upgrading of cover for light operating facility and center fresh air grille with accent trims
- Upgrading via decorative trim above glove box
- Storage compartment in center of dashboard features push/push function (basic equipment)
- Fold-down compartment on driver's side (in conjunction with SA 493, storage compartment package).

Plastic, aluminium and wood versions of the decorative trim above the glove box are available.

In vehicles with integrated automatic heating and air-conditioning 2/1-zone IHKA (SA 534), the knurled wheels on the fresh air grille are illuminated to make them easier to find at night.

# F25 Introduction

## 3. Exterior trims and interior equipment

### 3.2.4. Center console



F25 center console

#### Highlights

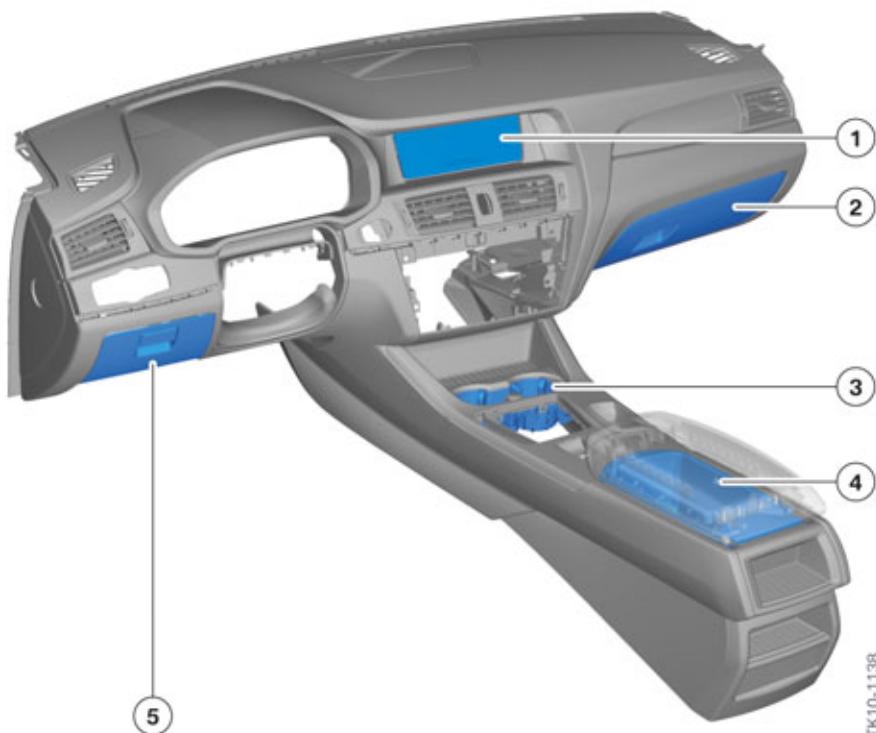
- Clad side edges
- Robust cup holder.

Plastic, aluminium and wood versions of the decorative trim on the center console are available.

# F25 Introduction

## 3. Exterior trims and interior equipment

### 3.2.5. Storage options at front



F25 Storage options at front

Index	Explanation
1	Storage compartment, dashboard (standard specification)
2	Glove box
3	Cup holder
4	Storage compartment, center armrest
5	Fold-down compartment

The fold-down compartment on the driver's side provides an additional storage surface within the driver's reach.

The volume of the glove box and storage compartment in the center armrest in the F25 is one liter more than the volume in the E83.

Two drinks containers each with a capacity of 650 ml, or the plug-in ashtrays available as special accessories, can be accommodated in the cup holders.

# F25 Introduction

## 3. Exterior trims and interior equipment



F25 Folding compartment, front

A 1.5 liter bottle can be easily accommodated in the folding compartments of the front doors.

### 3.2.6. Storage options in rear

A 1.0 liter bottle can be easily accommodated in the folding compartments of the rear doors.

Both cup holders are integrated ergonomically within easy reach in the center armrest. These can hold two drinks containers each with a capacity of 650 ml/0.68 qrt, or the plug-in ashtrays available as special accessories.

### 3.2.7. Front seats

The following front seat variants are available for the F25:

- Basic seat, electrical, driver's seat with memory
- Sports seat, electrical, driver's seat with memory

#### Seat equipment

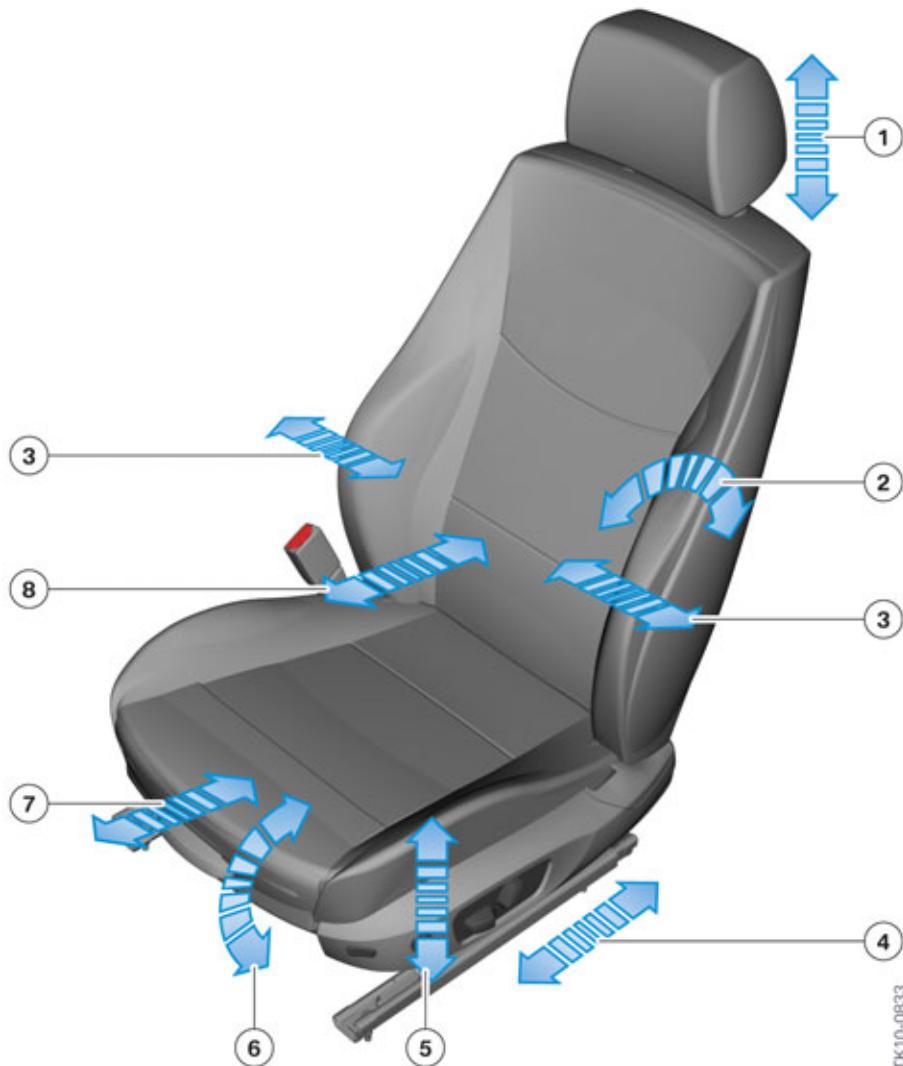
Optional equipment	
Sports seats for driver / front passenger (ZMP M Sport Package)	Option 481
Seat heating for driver and front passenger/ Rear passenger (ZCW Cold Weather Package)	Option 494/496
Lumbar support, driver / front passenger (ZPP Premium Package)	Option 488

# F25 Introduction

## 3. Exterior trims and interior equipment

### Seat adjustment

In the maximum equipment specification, the seats of the F25 can be adjusted in eight directions forwards or backwards.



TK10-0833

F25 Maximum seat adjustment

Index	Explanation
1	Head restraint height adjustment
2	Backrest angle adjustment
3	Backrest width adjustment
4	Forward/back seat adjustment

# F25 Introduction

## 3. Exterior trims and interior equipment

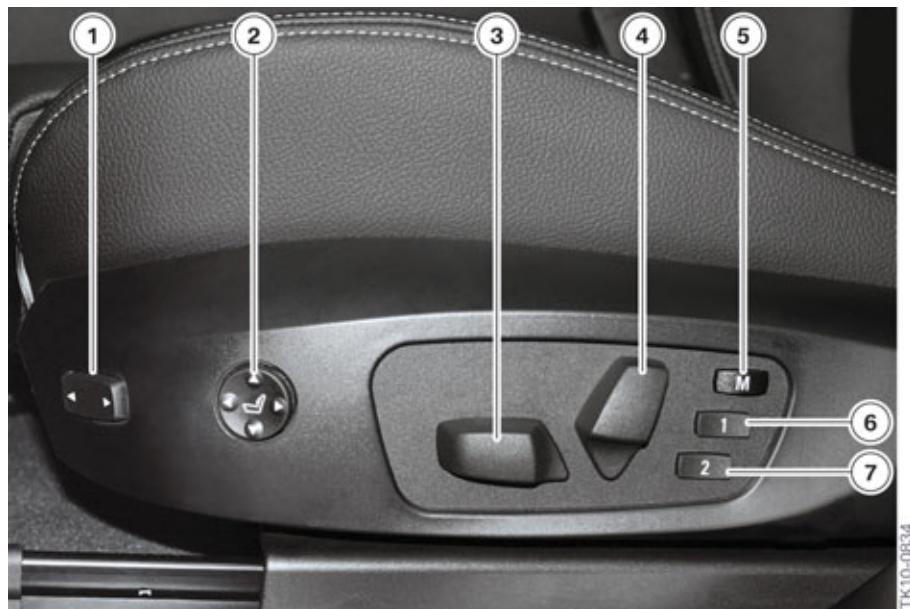
Index	Explanation
5	Seat height adjustment
6	Seat angle adjustment
7	Seat depth adjustment
8	Lumbar-support adjustment

Seat adjustment options	Seat adjustment, electrical, driver's seat with memory (SA 459)
Seat height adjustment	electrical
Forward/back seat adjustment	electrical
Seat angle adjustment	electrical
Backrest angle adjustment	electrical
Head restraint height adjustment	manual
Seat depth adjustment	manual <sup>1</sup>
Backrest width adjustment	electrical <sup>1</sup>
Lumbar-support adjustment	electrical <sup>2</sup>

<sup>1</sup> Only in conjunction with the following optional equipment: sports seats for driver/front passenger (SA 481).

<sup>2</sup> Only in conjunction with the following optional equipment: lumbar support, driver/front passenger (SA 488).



F25 Seat adjustment, driver (at seat), electrical sports seat with memory

# F25 Introduction

## 3. Exterior trims and interior equipment

Index	Explanation
1	Backrest width adjustment
2	Lumbar-support adjustment
3	Forward / back, seat height and seat angle adjustment
4	Backrest angle adjustment
5	Button M (stores current position)
6	Button 1 (calls up stored position)
7	Button 2 (calls up stored position)

### Seat heating

The buttons for operation of the seat heating are in the IHKA control box.



F25 IHKA control box

Index	Explanation
1	Button for seat heating, driver's seat
2	Button for seat heating, front passenger seat

### Crash-active headrest

The front seats are equipped with crash-active head restraints. These head restraints feature a pyrotechnic actuator that epitomizes the distance and height of the restraint in relation to the head in the event of a rear-end collision of sufficient force. This reduces the stress in the region of the cervical spine during a rear-end collision.



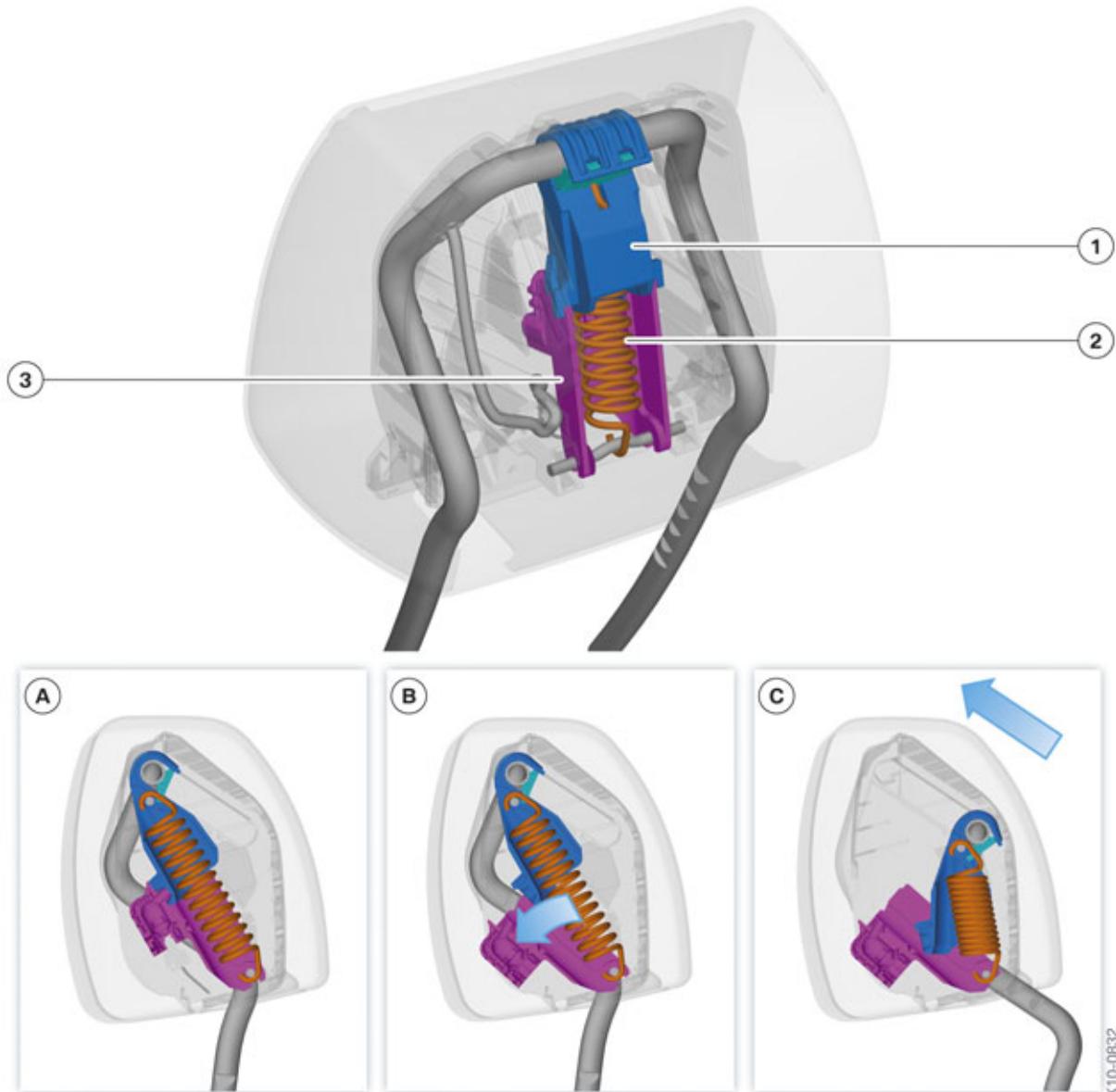
**If the active head restraints have been triggered, the pyro-actuators must be replaced in the workshop. It is essential to refer to the repair instructions please.**

# F25 Introduction

## 3. Exterior trims and interior equipment



**Seat or head restraint covers or accessories for mounting on the head restraint that could reduce the protective effect must not be used.**



F25 Crash-active headrest

# F25 Introduction

## 3. Exterior trims and interior equipment

Index	Explanation
A	Driving position
B	Support activated
C	Crash position
1	Support, upper part
2	Tension spring
3	Support, lower section with pyrotechnics

The head restraints are adjusted via preloaded tension springs. If the ACSM detects a rear-end collision, the pyrotechnic actuators are activated and the preloaded tension springs are released.

### 3.2.8. Rear seats

#### Passenger-compartment space in comparison with E83

- Wider passenger compartment (rear seat passengers sit 20 mm (0.78 in) further apart which provides more room for shoulders and elbows)
- Significantly more knee room
- Rear seat position raised by 8 mm (0.31 in) in relation to front seat
- The waistline is 11 mm (0.43 in) lower which significantly improves the feeling of space when compared to competitor models
- Isofix on left/right (for maximum of 2 child seats).

#### Equipment

Rear seat heating (SA 496) and a through-loading system (SA 465) with separate folding center section and 40/20/40 division are available as optional equipment.



F25 Rear seat backrest

### 3.2.9. Climate control

IHKA is standard for the F25.

# F25 Introduction

## 3. Exterior trims and interior equipment



TK10-0839

F25 Control panel of 2/1-zone IHKA

- 2/1-zone IHKA

The first number denotes the number of controllable temperature zones (temperature selector wheels) and the second denotes the number of controllable air volume and air distribution zones (separate fan settings).

The 2/1-zone IHKA the temperature can be controlled on the driver and passenger side separately.

When the ALL button of the 2/1-zone IHKA is pressed, the current temperature settings on the driver's side are transferred to the front passenger side.

The 2/1-zone IHKA also features automatic air recirculation control (AUC). This means that fresh air containing odors or pollutants is blocked. The interior air is then recirculated.

### Equipment

	IHKA 2/1-zone
Separate temperature control, front left/right	Yes
Independent ventilation	Yes
Anti-misting	Yes
Automatic air recirculation control (AUC) (including micro filter)	Yes
Individual automatic control with 5 intensity levels	Yes
Solar compensation	Yes
ALL function (driver's settings are transferred to front passenger)	Yes

### Highlights

The F25 features rapid cooling and heating behavior with a greater degree of comfort in terms of acoustics and level of customization.

- optimized air flow rate

# F25 Introduction

## 3. Exterior trims and interior equipment

For a heating/air-conditioning unit in this class, it delivers outstanding performance. The entire volume of air in the vehicle can be replaced up to 3 times a minute.

- Fresh/recirculation air is filtered through interaction with automatic air recirculation control sensor  
The quality of the intake air is monitored continuously by an automatic air recirculation control sensor. This ensures that pollutants do not enter the passenger compartment when driving in towns or through tunnels. The incoming fresh air is also cleaned by a carbon canister. With the air recirculation function, air is also filtered in order to prevent soiling of the heating and air conditioning system components and passenger compartment and also to ensure hygienic operation.
- Solar and condensation sensor  
A combination sensor integrated into the mirror base determines the angle of incidence and the intensity of solar radiation. This means that although solar radiation is present the IHKA can maintain an even and pleasant temperature in the passenger compartment. The IHKA can reliably prevent fogging of the window glass through selective control intervention by measuring the surface temperature of the windscreens and air humidity.
- Climate styles and layering function  
When the IHKA is in AUTO mode, the customer can adjust the amounts of air according to his individual comfort requirements using five different "climate styles" without exiting AUTO mode. The ventilation temperature (oncoming flow at upper body) can be adjusted individually via the layering function.

### 3.3. Luggage compartment

The luggage compartment capacity is 550 liters. The luggage compartment has enough space for four golf bags or three mountain bikes (for example), as well as three occupants.

#### Highlights

- 12 V charging socket under loading floor, e.g. for the storage of compact electronic equipment in a concealed area combined with charging option for when the vehicle is in motion (in conjunction with SA 493, storage compartment package)
- 12 V charging socket in trim panel of luggage compartment on right
- Folding and removable collapsible box, which can be stored below the loading floor (in conjunction with SA 493, storage compartment package)
- Flexible storage net for three different attachment positions including pocket function (in conjunction with SA 493, storage compartment package)
- Scratch and wear-resistant stainless steel loading edge (in conjunction with SA 3XL, X-Line package)
- Luggage compartment separation net (SA 413): the roller blind cassette can be unlocked at the push of a button which represents a significant improvement in terms of comfort.

# F25 Introduction

## 3. Exterior trims and interior equipment

### 3.3.1. Dimensions



TK10-0427

F25 Dimensions, luggage compartment

		F25	E83
Width of luggage compartment at narrowest point (1) (between wheel arches)	[mm]	1100	954
Width of luggage compartment at widest point	[mm]	1200	1339
Luggage compartment opening (2)	[mm]	914	937
Height of opening in body (3)	[mm]	812	846
Width of rear opening – top	[mm]	1010	1005
Width of rear opening – bottom	[mm]	1112	1125
Height of loading edge above roadway (4)	[mm]	680	659
Step, loading edge to loading floor	[mm]	13	12
Length of luggage compartment floor (5)	[mm]	952	972
Length of luggage compartment floor (with fold down rear seat backrest)	[mm]	1759	1710
Height of luggage compartment (6)	[mm]	807	911
Height of luggage compartment below roller cover for luggage compartment	[mm]	461	461
Luggage compartment capacity	[liters]	550	480
Luggage compartment capacity (with fold down rear seat backrest)	[liters]	1600	1560



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